TSEYTLIN, M.

Advertisements for savings banks. Fin.SSSR 17 no.6:70-72 Je '56.
(Advertising--Savings banks) (MLRA 9:9)

TSEYTLIN, M.

Concerning leading and laggard savings bank. Fin.SSSR 16 no.11:
81-83 N '55. (MLRA 9:1)
(Savings and savings bank)

1. VASIL'KOV, I., TSEYTLIN, M.

2. USSR (600)

4. Coal

7. Coal--the inexhaustible treasure. Mast. ugl. 1, no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

TSEYTLIN, M.

/Solnechnyy Kamen' (Sun-Stone, By) I. Vasil'kov (and) M. Tseytlin.
Moskva, Ugletekhizdat, 1951.
2 v.

AB 520440

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757020007-2"

TSEYTLIN, M. A.

Tseytlin, M. A. "Government (Imperial) glass and mirror plants in St. Petersburg," Materials for the industrial history of old St. Petersburg, Sbornik nauch. trudov (Leningr. fin. - ikon. in-t), No. 5, 1948, p. 145-77

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

TSEYTLIN, M.A.

Increase of the duration of intervals between the servicing of VK-100-2 turbines. Energ. i elektrotekh. prom. no.3: 55-61 Jl-S '62. (MIRA 18:11)

1. Glavnoye upravleniye energeticheskogo khozyaystva Donetskogo basseyna.

TSEYTLIN, M.A., inzh.; GORBACHEVSKIY, V.V., inzh.

Installation of pins and gunite linings in furnace screens of boilers with liquid slag removal. Energ. i elektrotekh. prom. no.3:57-58 Jl-S '65. (MIRA 18:9)

LEPIN, G.F.; BUZUNOV, V.N.; TSEYTLIN, M.A.; BUGAY, N.V.

Increase in the operational reliability of the fastening devices of electric power systems operating under high pressures. Energ. i elektrotekh. prom. no.2:59-64 Ap-Je '62. (MIRA 15:6)

1. Krivorozhskiy vecherniy industrial'nyy institut (for Lepin, Buzunov). 2. Glavnoye upravleniye energeticheskogo khozyaystva Donetskogo basseyna (for TSeytlin, Bugay).

(Steam power plants)

TSEYTLIN, M.A., inzh.; LEVITSKAYA, L.A., inzh.

Protection of boiler water-wall tubes from high-temperature gas corrosion in electric power plants of the Donets Basin Electric Power System. Energ. i elektrotekh. prom. no.3:50-51 Jl-S '64. (MIRA 17:11)

TSEYTLIN, M.A.

Fuel Abst.
Vol. 15 No. 4
Apr. 1954
Steam Raising and
Steam Engines

3067. NEW DIAGRAM FOR DETERMINING VIBRATION CHARACTERISTICS OF STEAM TURBINE BLADES. Kolendovskii, P.S. and Tseitlin, M.A. (Elekt. Sta. (Pwr Sta., Moscow), Apr. 1953, 20-23). Comparing the Campbell diagram showing the dynamic force as a function of turbine rotor velocity, with a diagram envolved by the Donets coal field power undertaking, the writer demonstrates the greater practical utility of the latter which he suggests should be adopted by all power stations carrying out annula vibration tests of steam turbine blades.
B.E.A.

5/27/54 LM

LEVITSKIY, Yu.V., inzh.; SOKOLINSKAYA, I.G., inzh.; TSEYTLIN, M.A., inzh.

Ultrasonic method of testing welded joints in steam lines of pearlitic steels. Elek.sta.29 no.3:83-84 Mr '58. (MIRA 11:5)
(Ultrasonic waves--Industrial applications)
(Welding--Testing)

TSEYTLIN, Meyer Abramovich; PRIVEZENTSEVA, A.G., red.; KAPRALOVA, A.A., tekhn.red.

[Problems of compiling indices of industrial production] Voprosy postroeniia pokazatelei promyshlennoi produktsii. Moskva, Gosstatizdat TsSU SSSR, 1960. 102 p. (MIRA 13:7)
(Industrial statistics) (Index numbers (Economics))

KRYLOVA, M.D.; GOFMAN, I.L.; BERLIN, M.N.; TSEYTLIN, M.A.

Production of typhoid type phages Vi-II on serum media. Zur. mikrobiol., epidem. i immun. 27 no.3:39-41 Mr' 56. (MLRA 9:7)

1. Iz kafedry epidemiologii I Moskovskogo ordena Lenina meditsinskogo instituta.
(SALMONELLA TYPHOSA,
bacteriophage Vi-II (Rus))
(BACTERIOPHAGE,
of Salmonella typhosa, Vi-II (Rus))

ANTONENKO, V.S.; BUGAY, N.V.; TSEYTLIN, M.A.

Operational reliability of 200 Mw. blocks. Energ. i elektrotekh. prom. no.2:59-61 Ap-Je '63. (MIRA 16:7)

1. Glavnoye upravleniye energeticheskogo khozyaystva Donetskogo basseyna.
(Electric power plants) (Steampipes)

KORSHIKOV, G.V., inzh.; VORONOV, Yu.G., inzh.; TSEYTLIN, M.A., inzh.; KIYASHKO, Yu.M., inzh.; GOROKHOV, A.S., inzh; SEKACHEV, M.A., inzh; Prinimali uchastiye: ARSHINOV, G.P.; GRIGOR'YEV, Ye.I.; KUVARIN, Yu.N.; RUDAKOV, N.V.; BUYEV, V.Ye.; ICGL'NITSYN, A.N.

Investigating the oxidizing zone of a blast furnace working under oxygen-enriched blowing (35% oxygen) and using natural gas. Stal' 25 no.8:781-790 S '65. (MIRA 18:9)

Tseytlin, M. B.

"Electronic Efficiency of an M-Type Backward-Wave Oscillator." p. 261.

Trudy (Transactions of the Conference on Superhigh-Frequency Electronics) Moscow, Gosenergoizdat, 1959. 271 p. 3,500 copies printed.

The book contains a number of papers dealing with the more important problems of superhigh-frequency electronics. The papers were submitted at the Conference on Electronics called by the Vsesoyuznyy nauchnyy sovet po radiofizike i radiotekhnike AN SSSR (All-Union Scientific Council for Radiophysics and Radio Engineering, AS USSR) and the Byuro novoy tekhniki MO SSSR (Bureau of Modern Engineering, Ministry of Defense, USSR) and held in Moscow in 1957.

69912
S/109/60/005/04/028/028
E140/E435

9.4230

AUTHORS: Tseytlin, M.B. and Il'ina, Ye.M.

TITLE: The Analysis of Electron-Flow Interaction with a Travelling Wave

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 4, pp 700-704 (USSR)

ABSTRACT: In the assigned field approximation, it is usually assumed that the HF-field intensity in the delay line varies exponentially. However, in this approximation, it is not possible to study the signal behaviour in the initial part of the tube. In the present note the form of variation of the HF-field amplitude along the tube is not preassigned but is determined from the equation of balance of real power. It is assumed that the field in the line may be represented by a single wave with constant face velocity. The results of the study permit the value of gain to be estimated. There are 4 figures and 8 references, 6 of which are Soviet, 1 English and 1 English in Russian translation.

SUBMITTED: May 18, 1959

Card 1/1

S/109/60/005/06/020/021
E140/E163

AUTHORS: Tseytlin, M.B., and Il'ina, Ye.M.

TITLE: Approximate Analysis of Type O BWT Operation

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 6, pp 1010-1012 (USSR)

ABSTRACT: The method used in Ref 6, consisting in finding the amplitude distribution of the HF-field intensity along the tube in a BWT from the equation of real power balance, is used in the present communication to analyse a type O BWT. The method also permits taking into account approximately the line attenuation as was done in Ref 6.
There are 1 figure and 6 references, of which 4 are Soviet and 2 English.

√B

Card 1/1

SUBMITTED: June 13, 1959

21442

S/109/61/006/001/021/023
E140/E163

9,4230

AUTHORS: Tseytlin, M.B., and Il'ina, Ye.M.

TITLE: TWT amplification with finite values of the gain parameter C

PERIODICAL: Radiotekhnika i elektronika, Vol.6, No.1, 1961, pp. 170-175

TEXT: The propagation constants in a TWT are expressed by an equation of fourth degree with complex coefficients. To simplify this equation it is usually assumed that the amplification parameter C introduced by Pierce is much smaller than unity. However, in medium and high power tubes C may reach values of 0.1 - 0.2. The energy method previously proposed by the present authors (Ref.4: Radiotekhnika i elektronika, 1960, Vol.5, No. 4, 700) permits a simple solution of the problem at finite values of the parameter C. The article presents various graphs, of interest in TWT theory, based on this solution. There are 8 figures and 6 references: 4 Soviet and 2 English.

SUBMITTED: April 19, 1960

Card 1/1

22270

S/109/61/006/005/017/027
D201/D303

9.4231

AUTHORS: Tseytlin, M.B., and Il'ina, Ye.M.

TITLE: The configuration of the field in a backward wave tube in the presence of distributed attenuation

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 826 - 828

TEXT: In their earlier work (Ref. 1: Radiotekhnika i elektronika, 1960, 5, 6, 1010) the authors gave an analysis of the operation of a backward wave oscillator. In the present article, they generalize the previous analysis extending it to a backward wave oscillator with losses. The equation for the balance of power in presence of attenuation in the tube, by analogy with Eq. (18) of another of the authors' works (Ref. 2: Radiotekhnika i elektronika, 1960, 5, 4, 700) will have the shape of

$$-\frac{E_1^2(z)}{2} = \frac{m}{\beta_q}\int_l^z E_1(x)\,dx\int_0^x E_1(t)\sin k(x-t)\sin\beta_q(x-t)\,dt - \frac{\beta_e Cd}{2}\int_l^z E_1^2(x)\,dx, \quad (1)$$

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22270

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The configuration of the ...

In it $E_1(z)$ - the amplitude of the HF field intensity; $K = \beta_e bC$; $m = \beta_e \beta^2 C^3$; $C^3 = \frac{KI_0}{4u_0}$; $\beta_q = \frac{\omega q}{v_0}$ [Abstractor's note: In the last expression, β is missing at the LHS, only the suffix q has been inserted]; $\beta_e = \frac{\omega}{v_0}$; ω_q - the frequency of plasma oscillations in the beam; v_0 - the velocity of electrons; b - the coefficient of non-synchronism; d - attenuation parameter, $d = \frac{L}{54.5CN}$; L - attenuation of the line in db; z = 1 corresponding to the collector and of the line. Eq. (1) reduces to a differential equation of the 5th order

$$\frac{d^5E_1}{dz^5} - \beta_e Cd\frac{d^4E_1}{dz^4} + 2(k^2+\beta_q^2)\frac{d^3E_1}{dz^3} - 2(k^2+\beta_q^2)\beta_e Cd\frac{d^2E_1}{dz^2} + [(k^2-\beta_q^2)+2km]\frac{dE_1}{dz} - (k^2-\beta_q^2)\beta_e CdE_1 = 0. \quad (2)$$

with the boundary conditions

Card 2/5

$$z=0,\quad E_1(z)=E_1(0),\quad \frac{dE_1}{dz}=\beta_e CdE_1(0),\quad \frac{d^2E_1}{dz^2}=(\beta_e Cd)^2E_1(0),$$
$$\frac{d^3E_1}{dz^3}=(\beta_e Cd)^3E_1(0),\quad \frac{d^4E_1}{dz^4}=-2kmE_1(0). \tag{3}$$

The solution of Eq. (2) can be represented as

$$E_1(z)=\sum_{i=1}^{5}C_i e^{\lambda_i z}, \tag{4}$$

where λ_i - the roots of the characteristic equation for Eq. (2). Assuming that disturbances introduced by losses are small it can be assumed in approximation that

$$\lambda_i=\lambda_{0i}(1-\delta_i), \tag{5}$$

where λ_{0i} - the roots of the corresponding characteristic equation for d = 0. The constants of integration C_i are determined by sub-

stituting into Eq. (4), the initial conditions

$$C_1 = \frac{2km + \lambda_{02}\lambda_{03}\lambda_{04}\beta_e Cd - (\lambda_{03}\lambda_{04} + \lambda_{02}\lambda_{03} + \lambda_{02}\lambda_{04})(\beta_e Cd)^2}{\lambda_{01}(\lambda_{02} - \lambda_{01})(\lambda_{03} - \lambda_{01})(\lambda_{04} - \lambda_{01})}, \quad (6)$$

C_2, C_3, C_4 are determined by cyclically changing the indices

$$C_5 = 1 - \sum_{i=1}^{4} C_i. \quad (7)$$

The distribution along the tube of the relative amplitude of HF field intensity for different values of parameter d and for a negligibility small space charge (QC = 0) is shown. A similar dependance for the space charge (QC = 0.25) is also given graphically. The presence of maximum can be explained as follows: The field amplitude in the absence of losses varies according to a nearly cosinusoidal law, i.e. at the beginning of the tube it remains practically constant. The attenuation of the "cold" wave along the line is exponential and its amplitude decreases along the direction of the energy stream. It follows that the power stream of losses increa-

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The configuration of the ...

ses continuously in this direction and the increase of amplitude of the field due to interaction with the electron stream is compensated at a certain point by the decrease due to losses, after which the amplitude will begin to decrease. The trigger values of CN are determined from the condition of the zero field at the collector. The dependence of trigger values of CN on the distribution of losses L shown then for various values for the space charge parameter QC. There are 3 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Johnson, Proc. I.R.E. 1955, 43, 6, 684.

SUBMITTED: September 9, 1960

Card 5/5

TOPIC TAGS: E type tube, [illegible]

[illegible]

ACCESSION NR: AP5005344

physical ... simple formulas for the ... method ...

TSEYTLIN, M.B.

Interaction of nonrectilinear beams with electromagnetic waves. Radiotekh. i elektron. 11 no. 2:233-243 F '66 (MIRA 19:2)

1. Submitted October 30, 1964.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757020007-2"

[redacted]

ACC NR: AP6032920 SOURCE CODE: UR/0142/66/009/003/0316/0326

AUTHOR: Gayduk, V. I.; Tseytlin, M. B.

ORG: none

TITLE: Theory of cylindrical M-type beam instruments and the effect of space charge

SOURCE: IVUZ. Radiotekhnika, v. 9, no. 3, 1966, 316-326

TOPIC TAGS: electron amplifier, space charge, electron gun, radial beam tube

ABSTRACT: The theory of small signal amplifiers with a rotating electron beam formed by an electron gun, and with crossed-over electric and magnetic fields is presented. A disperison equation is derived from which, as a special case, known results for the E- and M-types of amplifier are determined. The bunching process in such amplifiers is compared. Special attention is given to cylindrical M-type amplifiers operating in large magnetic fields. The field of the space charge is considered for the care when the line walls are spaced either very far apart from or very close to the flat beam. Certain abnormal relationships are described between the amplification in M-type instruments and generalized parameters resulting from the instrument's non-planar structure. Orig. art. has: 4 figures and 20 formulas.

SUB CODE: 09, 20/ SUBM DATE: 04Jun65/ ORIG REF: 008/ OTH REF: 002/

Card 1/1 UDC: 621.385.633.24

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757020007-2"

ACC NR: AM5009854 BOOK EXPLOITATION UR

Tseytlin, Mikhail Borisovich; Kats, Al'bert Markovich

Traveling-wave tube; problems of theory and calculation (Lampa s begushchey volnoy; voprosy teorii i rascheta) Moscow, Izd-vo "Sovetskoye radio," 1964. 0310 p. illus., biblio. Errata slip inserted. 10,200 copies printed.

TOPIC TAGS: traveling wave tube, traveling wave interaction, helical spring, calculation, approximation calculation, ELECTRON FLOW

PURPOSE AND COVERAGE: This book develops the theory of traveling-wave tubes by incorporating the newest concepts of Soviet and other scientists. It is concerned primarily with electron flow and traveling wave interaction at high-value amplification factors as applied to medium- and high-power tubes. The text also includes a detailed study of the effect of a local absorber and of reflections from matching devices on traveling-wave tube characteristics, and an analysis of traveling-wave tube performance at ultimate levels of signal input. It also contains methods for calculating the basic parameters of helix-type traveling-wave tubes. The book is based on previous research carried out by the authors in collaboration with Ye.M. Il'ina, I.A. Man'kin, B.L. Usherovich, and V.S. Michkasov. It is intended for engineers and scientific workers in superhigh-frequency electronics, as well as for teachers and students at higher institutions of learning. The authors thank A.S. Tager and Yu.N. Pchel'nikov for their constructive criticism of the manuscript.

UDC: 621.385.633

Card 1/2

ACC NR: AM5009854

TABLE OF CONTENTS [abridged]:

SUB CODE: 09/ SUBM DATE: 29Aug64/ ORIG REF: 043/ OTH REF: 056

Card 2/2

GAYDUK, V.I.; TSEYTLIN, M.B.

Contribution to the theory of electronic wave guides with rotating electron currents. Radiotekh. i elektron. 10 no.2:284-301 F '65. (MIRA 18:3)

TSEYTLIN, Mikhail Borisovich; KATS, Al'bert Markovich; MASHAROVA, V.G., red.

[Traveling-wave tube; problems of theory and design] Lampa s begushchei volnoi; voprosy teorii i rascheta. Moskva, Sovetskoe radio, 1964. 310 p. (MIRA 17:12)

SAVINOV, O.A., kandidat tekhnicheskikh nauk; LUSKIN, A.Ya., inzhener; PAZHI, V.M., inzhener; TSEYTLIN, M.G., inzhener; SHEYKOV, M.L., inzhener.

Exploratory percussion drilling (for discussion). Stroi.prom. 31 no.10:8-11 O '53. (MLRA 6:11)
(Boring)

SAVINOV, O.A., kandidat tekhnicheskikh nauk; LUSKIN, A.Ya., inzhener; TSEYTLIN, M.G.

The VPM-1 universal small vibration borer. Biul.stroi.tekh. 10 no.10:9-10 My '53. (MLRA 6:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti. (Boring machinery)

SAVINOV, O.A.; LUSKIN, A.Ya.; TSEYTLIN, M.G.; PLEKHANOVA, S.V.; KAPLAN, M.Ya., redaktor; PUL'KINA, Ye.A., tekhnicheskiy redaktor.

[Vibration pile driver with spring-suspended pile cap]Svainye vibropogruzhateli s podressorennoi prigruzkoi. Leningrad, Gos. izd-vo lit-ry po stroit. i arkhit.,1954. 126 p. (MLRA 8:9)
(Pile driving)

TSEYTLIN, M. G.

TSEYTLIN, M. G.: "Methods of developing vibration machines to be submerged in casings". Leningrad , 1955. Min Higher Education USSR. Leningrad Order of Labor Red Banner Construction Engineering Inst. (Dissertations for the Degree of Candidate of Technical Sciences.)

So: Knizhnaya letopis' No. 49, 3 December 1955. Moscow.

TSEYTLIN, M. G.

33347. K Voprosu O Poluchenii Urozhaya Vinograda Na Pasynkakh. Vinodeliye I Vinogradarstvo SSSR, 1949, No. 10, C. 19-20

SO: Letopis' Zhurnal'nykh Statey Vol. 45, Moskva, 1949

TSEYTLIN, M.G.

Viticulture--Soviet Central Asia

"Formation and trimming of the grapevine in Central Asia." Reviewed by M.G. Tseytlin. Vin. SSSR 12, no. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, JUNE 1952 ~~1953~~, Uncl.

1. TSEYTLIN, M. G.

2. USSR (600)

4. Grapes

7. Some problems about grapevine fertility. Vin. SSSR 12 no 11 N '52

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757020007-2"

TSEYTLIN, M.G.

M

USSR/Cultivated Plants. Fruits. Berries.

Abs Jour : Ref Zhur- Biol., No 8, 1958, No 34832

Author : Tseytlin M.G.
Inst : Uzbekistan Institute for Agriculture
Title : Use of Off-Shoots as a Basis for the Rational Cutting of Grape Shrubs

Orig Pub : Nauch. tr. Uzb. s. kh. in-t, 1956, 9, ch. 1, str. 189-195

Abstract : An insufficient amount of fruit-bearing shoots and a low coefficient of fruit-bearing in a series of Central-Asiatic varieties of grapes seriously impairs efforts towards increasing yields. The author and other researchers have ascertained that off-shoots developed after a timely pinching of the basic vines result in increased fruit-bearing (200 percent in varieties Khusain and 125 percent in the variety Kishmish white). Off-shoots developed well, ripened and and appeared to be endowed with greater winter-hardiness than the basic shoots. By leaving the basic shoots together with

Card : 1/2

TSEYTLIN, M.G.

USSR/Cultivated Plants. Fruits. Berries. M

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34825

Author : Tseytlin M.G.
Inst : Agricultural Institute of Uzbekistan
Title : Method Promoting Fuller Fucundation of Flowers and Better Development of Fruit in Both Sexes of Grape Varieties

Orig Pub : Nauch. tr. Uzb. s. kh. in-t, 1956, 9, ch. 1, 197-215

Abstract : An insufficient ovulation of berries is often observed in varieties of the female function, as well as in varieties of both sexes of grapes, which is due to sterility of the pollen, to its poor transfer or to non-germination. This leads to a decrease in crops. Cross pollination of various species and with one single specie favorably influences the ovulation of berries and promotes an increase in their size. For the purpose of securing a better ovulation, additional artificial pollination is carried out with a pollen mixture favoring an increase in the amount of berries, in the amount of their seeds and in their weight and size. According to

Card : 1/2

NATSVIN, A.V.; CHEREVATENKO, A.S.; VASIL'YEV, K.V.; PROTOSEVICH, L.A.; CHERNOVALOVA, V.P.; LEPLINSKAYA, A.A.; PAVLOV, A.K.; TASHMATOV, L.T.; SMIRNOV, P.K.; SOLDATOV, P.K.; KHAYDARKULOV, G.I.; TSEYTLIN, M.G., kand. sel'khoz.nauk; KUZNETSOV, V.V., kand. sel'khoz.nauk, otv. red.; KRIVONOSOVA, N.A., red.; SOROKINA, Z.I., tekhn. red.

[Best fruit and grape varieties for drying and preserving in the southwestern regions of Uzbekistan] Luchshie sorta plodovykh i vinograda dlia sushki i konservirovaniia v iugo-zapadnykh oblastiakh Uzbekistana. Tashkent, MSKh UzSSR, 1961. 162 p. (MIRA 15:7)

1. Institut sadovodstva i vinogradarstva im. R.R.Shredera. Samarkandskiy filial. 2. Samarkandskiy filial Instituta sadovodstva i vinogradarstva im. R.R.Shredera (for all except Kuznetsov, Krivonosova, Sorokina).

(Uzbekistan—Fruit—Varieties)
(Uzbekistan—Grapes—Varieties)

TSEYTLIN, M.G. (Leningrad)

Method for calculating the moment resistance during the starting of the pile-driving vibrohammer. Osn., fund. i mekh. grun. 3 no.1:17-18 '61. (MIRA 14:3)
(Vibrators) (Piling (Civil engineering))

TSEYTLIN, M.I.

Concrete was finishing machine with a long wheelbase. Biul. tekh.-ekon. inform. no. 2:38-40 '61. (MIRA 14:2)
(Road machinery)

TSEYTLIN, M. I., TOKAREVA, I. G., and GOLOVANOVA, N. V.

K Voprosy o Ratsional'noy Kombinirovannoy Terapii pri Shizofrenii, p. 299
V sb Aktual'n. probl. nevropatol. i psikhiatrii., Kuybyshev, 1957.

Iz kafedry psikhiatrii gor'kovskogo gosudarstvennogo meditsinskogo instituta imeni S. M. Kirova i iz Gor'kovskoy klinicheskoy psikhonevrologicheskoy bol'nitsy

1. TSEYTLIN, M. I.

2. USSR (600)

4. Electric Power Distribution

7. Central electric power supply for lumbering from networks of industrial power systems. Mekh. trud. rab. 6 No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

TSEYTLIN, M.I.

23

PHASE I BOOK EXPLOITATION SOV/5628

Akademiya nauk SSSR. Institut biologicheskoy fiziki

Rol' perekisey i kisloroda v nachal'nykh stadiyakh radiobiologicheskogo effekta (Role of Peroxides and Oxygen During Primary Stages of Radiobiological Effects) Moscow, 1960. 157 p. 4,500 copies printed.

Responsible Ed.: A. M. Kuzin, Professor; Ed. of Publishing House: K. S. Trincher; Tech. Ed.: P. S. Kashina.

PURPOSE : This collection of articles is intended for scientists in radiobiology and biophysics.

COVERAGE: Reports in the collection deal with the role of peroxides and oxygen in the primary stages of a radiobiological effect. They were presented and discussed at a symposium held December 25-30, 1958, organized by the Institut biofiziki AN SSSR, (Institute of Biophysics, AS USSR). Twenty-eight Moscow scientists, radiobiologists, radiochemists, physicists, and

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physical chemists took an active part in the symposium. Between the time of its conclusion and the publication of the present book some of the materials were expanded. In addition to the authors the following scientists participated in the discussion: L. A. Tummerman, V. S. Tongur, G. M. Frank, Yu. A. Kriger, E. Ya. Grayevskiy, N. N. Demin, B. N. Tarusov, and I. V. Vereshchenskiy. References follow individual articles.

TABLE OF CONTENTS:

8

TSEYTLIN, M.I.

112-3-5717

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 3, p. 96 (USSR)

AUTHOR: Tseytlin, M. I.

TITLE: Selection of Parameters for Basic Electrical Devices of Centralized Power Systems of Lumber Industries (Vybor parametrov osnovnykh elektricheskikh ustroystv dlya tsentralizovannogo elektrosnabzheniya lesozagotovitel'nykh predpriyatiy)

PERIODICAL: Tr. Tsentr. n.-i in-ta mekhaniz. i elektr. les. prom-sti, 1956, Nr 3, pp. 90-108

ABSTRACT: Typical circuit diagrams of power supply from the local power station and from the regional network are given. Given are formulae and graphs showing voltage loss per km depending upon the load, conductor cross section and power factor. Tables listing voltage losses for steel conductors are included. From total voltage losses of 10% which includes the step-up transformer, it is suggested that 2 to 2.5% be allotted for temporary taps increasing when necessary the generator voltage by 2.5 to 3% above the rated. Also given are tables for

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112-3-5717

Selection of Parameters for Basic Electric (Cont.)

selecting the power rating of the step-up and step-down transformers, depending upon the production capacity of the establishment in thousands of cubic meters. A.I.B.

ASSOCIATION: Central Scientific Research Institute for Mechanization and Electrification of the Lumber Industry (Tsentr. n.-i in-t mekhaniz. i elektr. les. prom-sti)

Card 2/2

GUBINA, A.A.; ZAKGEYM, Ye.N.; ZUSMANOVICH, V.M.; IVANOV, K.N.; LISITSYN, S.N.; MOZGOV, A.Ya.; PAVLOV, A.S.; PISKORSKIY, B.N.[deceased]; USHOMIRSKAYA, A.I.; FINKEL'SHTEYN, S.M.; CHISTOVSKIY, V.B.; SHER, S.Yu.; ADAMOV, O.V., nauchn. red.; BEYZERMAN, A.N., nauchn. red.; ZHIVOV, M.S., nauchn. red.; POGORELYY, P.P., nauchn. red.; STAROVEROV, I.G., nauchn. red.; STESHENKO, A.L., nauchn. red.; TSEYTLIN, M.M., nauchn. red.; KOKHANENKO, N.A., inzh., red.; VOLNYANSKIY, A.K., glav. red.

[Assembling interior sanitary equipment] Montazh vnutrennikh sanitarno-tekhnicheskikh ustroistv. Moskva, Stroiizdat, 1964. 725 p. (MIRA 17:8)

TSEYTLIN, M.Ya.

Wages for machinery operators. Mekh. sil'. hosp. 13 no.4:28-29 Ap '62. (MIRA 17:3)

1. Ministerstvo sel'skogo khozyaystva UkrSSR.

BUTKO, Stepan Danilovich, prof.; GURIN, Nikolay Illarionovich; ROGACHENKO, Sergey Nikitovich, dots.; TSEYTLIN, Mark Yakovlevich. Prinimal uchastiye KHRISTICH, O.G., dots.; RYABENKO, A.I., red.; YEROSHENKO, T.G., tekhn. red.

[Accounting on collective farms]Bukhgalterskii uchet v kolkhozakh. Pod red. S.D.Butko. Kiev, Gossel'khozizdat USSR, 1962. 417 p. (MIRA 16:2)
(Collective farms--Accounting)

TSEYTLIN, M. YA.

EDEL'SHTEYN, Y.V.; TSEYTLIN, M.Ya.

Urgent problems in the management of machine-tractor stations.
Mekh. sil'. hosp. [8] no.12:19-20 D '57. (MIRA 10:12)

1. Ministerstvo sil'skogo gospodarstva URSR.
(Machine-tractor stations)

TSEYTLIN, M.Ya. [TSeitlin, M.IA.]

Work mechanization and cost accounting on collective farms. Mekh.sil'hosp. 10 no.2:17-19 F '59. (MIRA 12:6)

1. Ministerstvo sel'skogo khozyaystva USSR.
(Collective farms--Accounting)
(Farm mechanization)

GRADSHTEYN, Izrail' Solomonovich; RYZHIK, Iosif Moiseyevich; Prinimali uchastiye: GERONIMUS, Yu.V.; TSEYTLIN, M.Yu.; LAPKO, A.F., red.; KRYUCHKOVA, V.N., tekhn. red.

[Tables of integrals, sums, series, and products]Tablitsy integralov, summ, riadov i proizvedenii. Izd.4., perer. pri uchastii IU.V.Geronimusa i M.IU.TSeitlina. Moskva, Gizmatgiz, 1962. 1100 p. (MIRA 15:9)

(Mathematics—Tables, etc.)

VASIL'KOV, I.A.; TSEYTLIN, M.Z.; TERPIGOREV, A.M., akademik, redaktor.

[Stored solar energy] Kladovye solntsa. Pod red. A.M.Terpigoreva. Moskva, Gos.izd-vo tekhniko-teoret.lit-ry, 1952. 63 p. (MLRA 6:7)
(Coal)

~~Cejtlin~~ M. TSEYTLIN, M.Z.

CZECHOSLOVAKIA/Cosmochemistry. Geochemistry. Hydrochemistry. D

Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26606 K.

Author : Vasilkov, I., Cejtlin, M.
Inst :
Title : Sunstone.

Orig Pub : Z. rus. Praha, Mlda fronta, 1954, 198 /6/ str., il., 25, 15 kčs.

Abstract : No abstract.

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TSEYTLIN, M. Z.

VASIL'KOV, Igor' Afanas'yevich; ~~TSEYTLIN, Mark Zakharovich~~; ABRAMOV, V.I., red.izd-va; KANASKOVA, I.R., tekhn.red.

[Biography of a machine; stories of Soviet coal cutter loaders] Biografiia odnoi mashiny; rasskazy o sovetskikh ugol'nykh kombainakh. Moskva, Ugletekhizdat, 1955. 97 p. (MIRA 11:6)
(Coal mining machinery)

TSEYTLIN, M. Z.

CIRCUITS

"Frequency Dividers Employing Transistors", by M.Z. Tseytlin, Elektrosvyaz', No 9, September 1957, pp 33-41.

Description of regenerative transistorized frequency dividers using junction and point-contact transistors. This circuit contains a frequency multiplier in the feedback loop and is similar to the vacuum-tube equivalent circuit. The application of the circuit is described and an experimental verification of the theoretical premises is given. The circuit is found to give reliable frequency division at a division coefficient from three to ten and above. The divider operates reliably with supply voltages ranging from five to 40 volts. The tolerance in the circuit parameters increase from 2 -- 2.5% at n = 0 (n is the frequency division coefficient) to 4 -- 10% at n = 3.

Another circuit described in this article is a regenerative frequency divider employing a ferrite peak transformer, in accordance with the circuit proposed by V.M. Rozov (Elektrosvyaz', June 1956), which can raise the frequency division coefficient to 14 -- 16. It is shown that a divider with a peak tranformer is more economic and consumes less power than a circuit employing two junction transistors.

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TSEYTLIN, M. Z., Candidate Tech Sci (diss) -- "Investigation of regenerative frequency dividers using semiconductor triodes under stationary conditions". Moscow, 1959. 13 pp (Min Communications USSR, Moscow Electrical Engineering Inst of Communications), 150 copies (KL, No 23, 1959, 168)

SOV/106-59-4-3/13

AUTHORS: Andreyev, V.S. and Tseytlin, M.Z.

TITLE: Wide-band Frequency Dividers with a Changeover Switch in the Feedback Circuit (Shirokopolosnyye deliteli chastoty s pereklyuchatelem v tsepi obratnoy svyazi)

PERIODICAL: Elektrosvyaz', 1959, Nr 4, pp 23 - 35 (USSR)

ABSTRACT: The authors consider first the action of a frequency divider (Figure 1) which uses a ring modulator shunting the grid input of a valve, as developed by Fitzgerald (Ref 4) and modified by Korolev (Ref 5). If one of the difference combination frequencies from the modulator coincides with the feedback frequency, then the circuit will divide the input frequency an even number of times. The equivalent circuit (Figure 3), represented as a switch across the grid input which can change the shunting impedance from r_n (low value) to r_3 (high value), is analysed. The grid voltage is shown to be:

$$u = \alpha e - \beta e \nu (t) \qquad (7)$$

where α and β are constants determined by the

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Wide-band Frequency Dividers with a Changeover Switch in the Feedback Circuit

circuit parameters; $\nu(t)$ is a unit switching function, equal to +1 when the feedback voltage is positive and -1 when it is negative. If an amplifier with a high input impedance is used, then $R_i \ll R_{BX}$, $r_n \ll r_3$, $R_i \ll r_3$ (R_i and R_{BX} being as shown in Figure 3), and:

$$\alpha \approx \frac{1}{2} \cdot \frac{1+2\frac{r_n}{R_i}}{1+\frac{r_n}{R_i}}; \quad \beta \approx \frac{1}{2} \cdot \frac{1}{1+\frac{r_n}{R_i}} \qquad (8).$$

If R_i is less than r_n, the frequency divider becomes ineffective. In this case, the modulator must be connected in 'series' instead of in 'shunt' (Figure 4). Because the resistance r_n is comparable with the input

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SOV/106-59-4-3/13

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resistance of a semiconductor triode, the valve in Figure 1 cannot be replaced by a semiconductor triode without modification of the circuit. A suitably modified circuit using a second semiconductor triode instead of a ring modulator was developed and the circuit is given in Figure 5. In the experimental work it was found that the frequency was changed not only by an even number of times but also by an odd number. This can be due to a number of causes: non-linear amplification, difference in rectifier characteristics, etc. In the subsequent analysis, the amplifier is considered linear and the relationships which give even division are investigated. The relationships deduced show that:

1) the output amplitude of the frequency divider bears a linear relation to the input amplitude;

2) the greater the slope of the amplifier and the greater the modulation depth of the input signal, the greater will be the output voltage;

3) the secondary (feedback) circuit reduces the resonant

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frequency of the primary circuit;
4) except under certain specified conditions, the frequency characteristics will be unsymmetrical.
The synchronisation bandwidth is investigated analytically and found to depend on the coupling between the primary and secondary circuit and on the Q of the secondary circuit. The results are illustrated graphically. The results of experimental investigation are given. There are 19 figures, 1 table and 7 references, 5 of which are Soviet and 2 English.

SUBMITTED: November 13, 1958

Card 4/4

TSUKERMAN, E.M., inzh.; TATISHCHEV, V.N., kand.tekhn.nauk, dotsent; TSEYTLIN, N.I.

The harmonic transmission. Vest.mashinostr. 42 no.6:79-83 Je '62. (MIRA 15:6)
(Gearing)

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Technology

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TSEYTLIN, Naum Isaakovich; MEN, S.A., red.; KHRUSTALEVA, N.I., red. izd-va; VORONINA, R.K., tekhn. red.

[Hoisting and conveying machinery] Pod"emno-transportnye mashiny. Moskva, Vysshaia shkola, 1962. 191 p. (MIRA 15:8)

(Hoisting machinery) (Conveying machinery)

ZHEVAKIN, S.A.; TROITSKIY, V.S.; TSEYTLIN, N.M.

Atmospheric radio emission and investigation of absorption of centimeter radio waves. Izv.vys.ucheb.zav.; radiofiz. 1 no.2: 19-26 '58. (MIRA 11:11)

1. Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Microwaves) (Atmosphere)

06471
SOV/141-1-5-6-15/28

AUTHOR: Tseytlin, N.M.

TITLE: Measurement of the Efficiency and Directivity of an Antenna at Metre Waves by Means of Extra-terrestrial Radio Radiation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Vol 1, Nr 5-6, pp 105 - 111 (USSR)

ABSTRACT: V.S. Troitskiy (Ref 1) proposed and theoretically justified a method of measuring the directivity of antennae on the basis of their natural noise and of the distributed cosmic radiation. This article is concerned with the application of the method to the range of metric waves. The cosmic radiation consists of a continuously distributed noise (the background noise) and the radiation of discrete sources. By using the radiation of the background it is possible to determine the losses in an antenna, while by means of the radiation of a discrete source one can determine its directivity (Ref 1). If the cosmic radiation is received from a direction determined by angles φ_o and ψ_o which do not contain a powerful discrete source, the

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noise temperature T_a at the matched load of the antenna is given by:

$$T_a = T_{cp}(\varphi_o, \psi_o)\eta + T_o(1 - \eta) + \Delta T(\varphi_o, \psi_o)\eta \qquad (1)$$

where T_{cp} is the average temperature of the antenna which is defined by Eq (2). The symbols in the equations are as follows:

$F^2_{\Gamma Л}(\Omega)$ is the main lobe of the directional pattern of the antenna;

$F^2(\Omega)$ is the overall antenna pattern;

$T(\Omega)$ is the background noise temperature;

T_o is the temperature of the material of the antenna (determining its own noise);

η is the efficiency of the antenna and

ΔT is the average temperature of the antenna when receiving the radiation from the regions lying outside the main lobe.

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If ΔT can be neglected, η can be determined from Eq (3), provided T_{cp} is known. The directivity of the antenna can now be determined by measuring the intensity of the radiation of a discrete source having an intensity S_ν and producing an average temperature T_{cp}. The directivity can be determined from Eq (4), where D denotes the directivity. The values η can be determined most accurately by measuring the radiation temperature difference between two regions having widely differing temperatures. For this case, Eq (1) can be written as Eq (5). Since the second term in Eq (5) can be neglected, the temperature difference can be expressed by Eq (6). Similarly, the most accurate values of the directivity can be obtained by measuring the temperature difference between a region containing a discrete source and a standard known region without a source. For this case, Eq (4) can be written as Eq (8). The most suitable radiation source for this measurement is Cassiopeia-A and Cygnus-A. The above method

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Measurement of the Efficiency and Directivity of an Antenna at Metre Waves by Means of Extra-terrestrial Radio Radiation

was used to determine the directivity of antennae at the wavelengths of 1.5 m and 3 m. From the measurements, it was concluded that the efficiency could be determined with an error of about 10% and the directivity with an error of 15-20%; these figures are valid for the wavelengths of 1-5 m and the antenna beam widths of 10-15°. The author expresses his gratitude to V.S. Troitskiy for directing this work. There are 2 figures, 1 table and 8 references, of which 2 are English, 5 are Soviet and 1 German.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: June 11, 1958

Card 4/4

TSEYTLIN, N.M.

05477
SOV/141-2-2-2/22

AUTHORS: Tu Leng-yao, Malakhov, A.N., Plechkov, V.M. Razin, V.A. Rakhlin, V.L. Stankevich, K.S. Strezhneva, K.M. T'ang Shou-p'o, Troitskiy, V.S. Khrulev, V.V. and Tseytlin, N.M.

TITLE: Observations of the Annular Solar Eclipse of April 19, 1958 on Wavelengths of 1.63, 3.2 and 10 cm

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika, 1959, Vol 2, Nr 2, pp 154 - 158 (USSR)

ABSTRACT: The report of a joint Soviet-Chinese expedition to the island of Hai-nan. The aerials used parabolic reflectors of Ling-sui ($\varphi = 18°30'32"$, $\lambda = 110°01'12"$) on the island diameters 1 m at the shorter wavelengths and 1.5 m at the longest. The fluctuations in the threshold of sensitivity were similarly 4°, 5° and 4°. The electrical axes of the aerials were parallel to one another. The absolute accuracy of intensity measurement was ± 15% at the longer wavelengths and ± 20% at the shortest. The relative accuracy, assuming an averaging period of 1 min, was 2-3%. The results are shown in Figure 1 as measurements of effective temperature expressed as a percentage of the

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temperature of the unclipsed sun. The values of the latter were 9 000 °K (1.63 cm), 21 000 °K (3.2 cm), 100 000 °K (10 cm). The vertical lines on the diagram represent the instants of disc "contact" (4 in number) and the occultation of certain well-known spots Nrs 188 and 186. A number of peculiarities may be noted. Between $2^h\ 0.5^m$ and $2^h\ 15^m$ and between $3^h\ 47^m$ and $3^h\ 58^m$ there is an increase in intensity over what might be expected. Figure 2 shows a synoptic chart of the sun. If the Nr 188 group of spots measures 3' x 1' the effective temperature (5.10^4 °K at 1.63 cm) and height 0.04 R at 10 cm) may be estimated. The curves for 3.2 cm and 10 cm in Figure 1 are asymmetrical. This may be explained as due to a wedge-shaped equatorial region which increases in brightness towards the eastern limb of the sun. The longer wavelength curves also show a small "hump" in the trough. This is due to "limb brightening" and it is possible to estimate its amount - e.g. at the

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shortest wavelength the annulus contributes 4.5% of the intensity of the uneclipsed sun. The effective radius of the "radio-sun" is also estimated as about 4% (depending on wavelength) greater than the optical radius. The deduced values of various constants are in Table 1. The [illegible] of China are thanked as are also Chuang Lichsin, Hsu Yuan, Li Chi-wen. The Ac.Sc.USSR are thanked, also A.P. Molchanov, B.M. Budkin, P.P. Lugovenko and A.A. Mel'nikov. There are 2 figures, 1 table and 2 Soviet references.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: December 9, 1958

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3,1700

AUTHOR: Tseytlin, N.M.

TITLE: The Calibration of Radio-astronomical Equipment

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 5, pp 677 - 682 (USSR)

ABSTRACT: The equivalent circuit of a receiving antenna is in the form shown in Figure 1. This consists of a source having an e.m.f. $\overline{e_f^2}$, a load impedance z_H and an internal impedance $z_a = R_a + jX_a$. It is shown that the e.m.f. can be expressed by:

$$\overline{e_f^2} = 4R_a k[T_o \gamma_a + T_\Sigma (1 - \gamma_a)] = 4R_a kT_a \quad (1)$$

where $\gamma_a = R_\pi / (R_\Sigma + R_\pi)$,

k is the Boltzmann constant,

R_Σ is the radiation impedance of the antenna and

R_π is the loss resistance of the antenna.

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Eq (1) is true for any receiving antenna. By employing the circuit of Figure 1, it is possible to determine the power spectrum density in the presence of a non-matched load, which is connected to the antenna by a line. The equivalent circuit in this case is shown in Figure 2. The spectral density of the noise at the points cd is now given by (Ref 7):

$$\overline{e^2} = kT_a \rho e^{-\gamma_Л} A_1 + kT_Л \rho (1 - e^{-\gamma_Л}) A_2 + kT_H \rho A_3 \quad (4)$$

where $T_Л$ and T_H are the temperature of the line and the load, respectively, ρ is the wave impedance of the line and $\gamma_Л = 2\alpha l$. The coefficients A_1, A_2 and A_3 are represented by Eqs (5), where p_a and p_H are the reflection coefficients for the antenna and the load, while

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$\alpha_1 = \alpha + j\beta$ is the propagation constant. The power spectrum density at the load is given by Eq (6). If the measurements are carried out by means of a radiometer, the reading of the output meter, β, is proportional to the difference of the spectral densities of a "cold" power standard, W_X, and of the antenna system W_H. During the calibration, the indication α of the output meter is proportional to the difference of the spectral density from a "hot" standard, W_Γ, and from the "cold" standard. The ratio β/α is expressed by Eq (8). During the measurement of the strength of the sources or the relative strength of a distributed cosmic source, it is usual to determine the power difference between the investigated region $T_{\Sigma 1}$ and the "standard" region of the sky. The corresponding readings of the output meter of the radiometer are β_1 and β_2. The relationship between these quantities and α is expressed by Eq (9). It is

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shown that, in practice, Eq (9) can be simplified and written as Eq (10), where ΔT_{Σ} is the temperature difference between the measured region and the standard region of the sky, η_{Λ} is the efficiency of the line and η_a is the efficiency of the antenna. If a noise diode is used for the calibration, Eq (10) can be written as Eq (11). The product $\eta_{\Lambda}\eta_a$ in Eqs (10) and (11) can be measured by the method described in Refs 2 and 8. At metre waves, the coefficient η is determined from the difference in the strength of the cosmic radiation from two calibration regions of the sky. The coefficient is expressed by Eq (12). Consequently, the strength of the source (on the basis of Eq 11) can be expressed by Eq (15), where K_1 is a coefficient taking into account the mismatch of the noise generator and I is the current of the noise diode. It is seen, therefore, that at metre waves, it is possible to measure the strength of a source

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without the thermal calibration or the determination of the efficiency by measuring the radiation from a source and a standard region. At centimetre waves, the coefficient η is expressed by Eq (17) (Ref 2), where $T_{\Sigma 3}$ is the temperature of the zenith and β_K is the reading of the output meter during the measurement of the internal noise of the antenna. If the system is mismatched and $T_o = T_{Л}$, Eq (17) can be written as Eq (18) or, approximately, as Eq (19). This expression is burdened with an error, the value of which is indicated in Table 1. If this error is permitted in the measurement, the temperature difference ΔT_{Σ} is expressed by Eq (20). From this, it is seen that at centimetre waves the measurement without the thermal calibration reduces the effect of the mismatch but does not completely eliminate it, as was the case with the metre waves. This is due to the fact that at metre waves the calibration is effected by means of an external source, while at centimetre waves

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the internal noise of the receiving system is used.
The author expresses gratitude to V.S. Troitskiy for formulating the problem and discussing the work.
There are 2 figures, 1 table and 9 references, 8 of which are Soviet and 1 English; one of the Soviet references is translated from English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete
(Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: February 14, 1959

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S/141/60/003/02/010/025
E192/E382

AUTHOR: Tseytlin, N.M.

TITLE: The Problem of Noise and Efficiency of Antennae

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 2, pp 257 - 268 (USSR)

ABSTRACT: First, a thin radiating metal resonator, having a radius a and a length 2L is considered. It is assumed that the radius is much smaller than 2L. The spectral density of the natural noise on a matched load z_H connected to the point $s_0 = 0$ of the resonator rod is given by (Ref 8):

$$P_{\omega B} = I_{\omega}^2(0) \left| z_a \right|^2 / 4R_a \tag{1.1}$$

where $z_a = z_H = R_a + jX_a$ is the input impedance of the radiating rod, $I_{\omega}^2(0)$ is the spectral density of the average current squared at the point of connecting the load. The current distribution in the radiator is described by Eq (1.2) at non-resonant frequencies and

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by Eq (1.3) at the resonant frequencies. In these equations ρ_1 is the resistance of the rod and $\Theta = kT$ (where k is the Boltzmann constant and T is the temperature of the radiator). The noise density at the matched load can be expressed by Eq (1.4) at non-resonant frequencies and by Eq (1.5) at the resonant frequencies. If the temperature of the radiator is uniform and ρ_1 = const, Eqs (1.4) and (1.5) can be written as Eqs (1.6), where R_σ is the resistive component of the impedance of a cylindrical conductor having the length 2L and the radius a . If it is necessary to take the skin effect into account, R_σ is given by Eq (1.7). The efficiency of the radiator is defined by:

$$\eta = R_\Sigma / R_a \qquad (1.8) ,$$

where $R_a = R_\Sigma + R_\eta$; here, R_Σ is the radiation

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resistance of the radiator and R_{Π} represents the loss resistance. It is shown that the efficiency at non-resonant frequencies is described by Eq (1.16), while at the resonant frequencies it is given by Eq (1.17). Finally, the spectral density of the radiation noise and the efficiency can be expressed by:

$$P_{\omega B} = \frac{\rho L}{2\pi a \delta R_a} A \frac{kT}{2\pi} ;$$

$$\eta_1 = 1 - \frac{\rho L}{2\pi a \delta R_a} A \tag{1.18}$$

where the constant A is defined on p 261. Eqs (1.18) are used to determine the losses γ_1 in the radiator; the losses are defined as $\gamma_1 = 1 - \eta_1$. The losses for a steel radiator operating at $T = 300\ ^{o}K$ are estimated

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in Table 1. An antenna situated in a cavity heated to a temperature $T_\eta(\vartheta, \varphi)$ is then considered. The radiation of a surface element ds of the cavity at a distance r from the antenna in the direction ϑ_o, φ_o is captured by the antenna over the spherical angle σr^2, where $\sigma = (\lambda^2/4\pi) D (\vartheta_o, \varphi_o)\eta$ is the effective capturing area of the antenna in the direction ϑ_o, φ_o; D is the directivity of the antenna in the direction ϑ_o, φ_o and η is the efficiency of the antenna system. It is shown by means of thermodynamic approach that for this case the spectral density of the power on the matched antenna load is given by Eq (2.5), the antenna being situated in a black cavity having a temperature T_o. The spectral density of the noise due to the thermal radiation of the passive elements of the antenna and the efficiency of the antenna (determined by the losses in the passive elements) are given by Eqs (2.7). These equations

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can also be derived by employing the electrodynamic approach. It is shown that in this case the efficiency and the noise of the passive elements are given by Eqs (2.16), which coincide with Eqs (2.7). The losses in the antenna due to the passive elements are defined by Eq (2.17). The losses are evaluated for an antenna operating at various wavelengths and the results are given in Table 2. Eqs (2.16) can be employed to evaluate the noise due to the radiation of the soil. The induced thermal noise in antennae can be evaluated by employing the Kirchhof formula:

$$P_{\omega} = \frac{2\pi^2 n^2 I_{0\omega}}{k^2} \sum A_{\omega i} \qquad (3.1)$$

where $A_{\omega i}$ are the energy absorption coefficients for various mutually orthogonal incident waves, $I_{0\omega}$ is the equilibrium radiation in vacuum, n is the refraction index and $k = 2\pi/\lambda$. Eq (3.1) can also be written as

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The Problem of Noise and Efficiency of Antennae

Eq (3.3). Now if the radiated power, expressed by Eq (3.3), is received by a body (for example, an antenna) having an effective area $\lambda^2 B_{\omega i}$ the spectral density of the power absorbed by the body is expressed by Eq (3.4). The author expresses his gratitude to V.S. Troitskiy for suggesting the problem and discussing this work and to M.L. Levin and V.A. Razin for discussing this paper. There are 1 figure, 2 tables and 10 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-research Radiophysics Institute of Gor'kiy University)

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AUTHOR: Tseytlin, N.M.

TITLE: The Measurement of the Intensity of Discrete Sources at Metre Wavelengths by Comparison with Distributed Cosmic Radiation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 2, pp 334 - 336

ABSTRACT: The calibration of a radio telescope usually requires a knowledge of the efficiency of the aerial, its mismatch and its polar diagram. At metre wavelengths, lack of precise knowledge of sidelobe structure introduces large errors. If the source intensity is measured with respect to regions of distributed emission only the main lobe of the aerial and the difference in mean temperatures of the "reference" regions need be known. Although absolute temperatures may not be known to better than 30%, relative values may be determined to within 5-10%. Expressions for the effective aerial temperatures when pointing at a discrete source and at two other regions are given in Eq (2). Hence, the intensity of the discrete sources is given by Eq (4). The values of the temperature differences may be

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found from isophot diagrams. Using this method, the intensity of Cassiopeia-A has been measured at 100 Mc/s (aerial $26^{\circ} \times 26^{\circ}$) and 207 Mc/s ($15^{\circ} \times 20^{\circ}$). The results were, for one polarization, respectively 100.10^{-24} and 31.10^{-24} $Wm^{-2}c^{-1}$. The accuracy is only about 20-25%. As noted by other writers, the spectrum is weaker around 200 Mc/s (Refs 3-6). There are 6 references, 1 of which is Soviet and 5 are English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institute pri Gor'kovskom universitete (Scientific-research Radiophysics Institute of Gor'kiy University)

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9,1800

AUTHORS: Troitskiy, V.S. and Tseytlin, N.M.

TITLE: Method of Measuring the Scattering Coefficient and Background Noise of Antennae. Absolute Measurement of the Background Brightness at Ultrahigh Frequencies

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 4, pp. 667 - 671

TEXT: The conditions of measuring the background are first considered. It is assumed that the space surrounding the antenna is for a given wave characterised by a brightness temperature distribution $T(\varphi, \psi)$, which should be measured by means of a radiometer having a radiation pattern $F(\varphi - \varphi^o, \psi - \psi^o)$ where φ^o and ψ^o are the azimuth and the height of the main beam of the antenna. The noise at the output of the antenna is given by:

$$T_a(\varphi^o, \psi^o) = \bar{T}_{гл}(\varphi^o, \psi^o)\eta(1 - \beta) + \bar{T}_б(\varphi^o, \psi^o)\eta\beta + T_o(1 - \eta) \quad (1)$$

where η is the efficiency of the antenna, $T_o(1 - \eta)$ is the internal noise of the antenna and

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T_o is the temperature of the body of the antenna.

The temperatures $\bar{T}_{\Gamma Л}$ and $\bar{T}_{Б}$ are defined by Eqs. (2) and represent the average intensity of the background contained in the main lobe and all the remaining lobes of the antenna, respectively; the parameter β in Eq. (1) represents the portion of the power radiated in the side lobes of the antenna. The first term of Eq. (1) represents the noise received by the main lobe of the antenna pattern, while the second term gives the power of all the remaining lobes. When measuring the background brightness it is necessary to determine the first term of Eq. (1). However, in order to avoid errors, it is necessary that the quantity $T(\varphi, \psi)$ be constant within the limits of the main lobe. The method proposed consists of measuring the radiation from three definite

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calibrating regions which can be arbitrarily situated in space. The true zenith is chosen as one of these calibration directions. The second direction is represented by the zenith "reflected" into the antenna by means of a flat mirror; the third direction is obtained by directing the antenna onto an absolutely dark surface situated together with the flat mirror and having a temperature T_o. Both surfaces are situated at the horizon level. The antenna noise temperature, when its main lobe is directed towards the zenith (φ_1, Ψ_1), is given by Eq. (3). The noise temperature at the output of the antenna when it is directed onto a reflecting surface $(\varphi_2$ and $\Psi_2)$ is given by Eq. (4), while the noise temperature, when the antenna is directed onto an absorbing surface having the same coordinates φ_2 and Ψ_2, is defined by Eq. (5),

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where $\bar{T}_{\Gamma\Pi}$ and $\bar{T}_{\text{б}}$ are determined from Eq. (2). Finally, the main lobe is directed towards the region whose temperature is to be determined (coordinates φ_x and ψ_x); the temperature is now given by Eq. (6). From Eqs. (4) and (5) it follows that ΔT_{32} is given by Eq. (7), from which it is possible to determine $\eta(1 - \beta)$; this is given by Eq. (8). The temperature $\bar{T}_{\Gamma\Pi_x}$ is therefore given by Eq. (11). All the quantities in this equation are known except Δ; however, in most cases, Δ can be neglected. In order to determine the background noise it is necessary to introduce an additional measurement, namely, the noise at the output of the antenna is compared with the noise of a black body, which is substituted for the antenna. The temperature of the black

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body is T_o. By employing this measurement it is possible to determine approximately the quantity η (Eq. 14). It is then possible to determine β_1 and a more accurate value of η. Finally, $\bar{T}_{b1}$ and $\bar{T}_{b2}$ can be found. From these, it is possible to determine the magnitude of the background noise. By employing the above method, η and β were measured for a 4 m paraboloid provided with a waveguide radiator. It was found that $\eta = 0.85$ and $\beta = 0.34$. The quantity β was also determined by a different method and it was found that the two values were in good agreement.
There are 3 references: 2 Soviet and 1 English.

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Method of Measuring the Scattering Coefficient and Background Noise of Antennae. Absolute Measurement of the Background Brightness at Ultrahigh Frequencies

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

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3,1550 (1057,1062,1129)

AUTHORS: Troitskiy, V.S., and Tseytlin, N.M.

TITLE: A Method of Measuring the Dielectric Constant of Lunar Soil

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol.3, No.6, pp. 1127-1128

TEXT: The dielectric constant of lunar soil has only been measured at optical frequencies using observed values of Brewster's angle for reflected solar light. Owing to the irregularity of the surface under investigation, the angle cannot be determined very accurately, and the dielectric constant is found to lie between 2 and 2.5. The present authors suggest that the larger radio telescopes which are now available should be used to study the polarization of the radio emission of the moon. Such measurements could be used to determine the dielectric constant of the lunar medium at radio frequencies. The method suggested by the present authors consists in the measurement of the radio brightness for the horizontally and vertically polarized radiation from a chosen part of the lunar surface. If φ, ψ

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are the selenographic coordinates of the chosen region, then

$$T_{\uparrow} = T_{cp}(\varphi, \psi)\,[1 - R_{\uparrow}(\varepsilon, \alpha)] \quad ;$$
$$T_{\rightarrow} = T_{cp}(\varphi, \psi)\,[1 - R_{\rightarrow}(\varepsilon, \alpha)] \quad ;$$

where $T_{\uparrow}$ and $T_{\rightarrow}$ are the brightness temperature of the surface for the vertically and horizontally polarized radiation respectively, $R(\varepsilon, \alpha)$ is the reflection coefficient, α is the angle between the line of sight and normal to the surface, and $T_{cp}(\varphi, \psi)$ is the average temperature of the surface layer. Since the loss angle of the lunar soil is relatively low (Ref.1), the reflection coefficient R may be calculated from the Fresnel formulae. Fig.1 shows calculated values of $T_{\uparrow}/T_{\rightarrow}$ as a function of α for various values of the average dielectric constant in range 1.2 - 5. The distance of the region under investigation from the limb of the lunar disc is indicated below the horizontal axis. It is clear from this figure that regions in the neighbourhood of the limb are the most suitable. The knowledge of the

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optical and radio values for the dielectric constants may be used to obtain information about the density of the surface material. The above discussion strictly applies only to the case of specular reflection. In reality, the reflections will be appreciably non-specular and the results will depend on the "roughness" of the surface. However, 8 mm experimental data (Ref.2) indicate that even in this wavelength region the specular effect is quite appreciable.
There are 1 figure and 2 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete
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3,1710

AUTHORS: Troitskiy, V.S., ~~Tseytlin, N.M.~~

TITLE: Radioastronomical methods of measuring signal intensities and of calibrating antennae and radio-telescopes in the centimetre band

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika. 1961, Vol.4, No.3, pp.393-414

TEXT: This is a general review of accurate absolute methods for measuring signal intensities as is necessary, for example, in radio astronomy. The authors divide the methods into two groups. In the first, the calibration is by the internal noise of the antenna system. In the second, it is by an external radiation source (e.g. a black body). A "black body" in this context can mean an absorbing screen or a region of soil, woods or sea. The authors consider the Moon to be the best "black body" to use: particularly if highly directional antennae are employed. They believe that the use of a "black body" together with a reflecting mirror is superior to the use of the internal noise of the antenna. This is because the former method not only permits the

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Radioastronomical methods ...

measurement of the radiation intensity but also of the overall absorption in the antenna system. It is also unnecessary to consider the background radiation with this method. On the other hand, it is simpler, in practice, to use the internal noise. This method also permits the measurement of the scattering factor. The authors suggest that the following investigations should be made in order to increase the accuracy of calibrating radio-telescopes in the centimetre band. (a) Study of the radio brightness of various soils etc. (b) Calibration of radio sources of small angular diameter. (c) Further investigation of the distribution of radio brightness across the lunar disc, and its phase dependence at centimetre wavelengths. (d) Investigation of methods of measuring the background radiation in the side-lobes. (e) Theoretical and experimental investigations into the use of a reflecting mirror and a black body in calibration.
The authors consider the following methods of calibration in the main body of the text:
(1) by the internal noise, with the antenna directed towards the zenith (e.g. Ref.7: V.S.Troitskiy, Radiotekhnika i elektronika, 2,
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